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FINDING LIST FOR GENERAL CATALOG NUMBERS.

G. C.	N. G. C.	G. C.	N. G. C.	G. C.	N. G. C.
100	196	3100	4556	5066	2515
200	376	3200	4668	5067	3123
300	516	3300	4793	5068	3229
400	676	3400	4961	5069	3801
500	842	3500	5095	5070	4270
600	1068	3600	5227	5071	4582
700	1320	3700	5361	5072	5200
800	1500	3800	5492	5073	5310
900	1653	3900	5634	5074	5366
1000	1783	4000	5771	5075	5404
1100	1892	4100	5925	5076	6634
1200	1997	4200	6152	5077	7150
1300	2102	4300	6362	5078	7285
1400	2216	4400	6611	5079	7692
1500	2436
1600	2488	4500	6805	5080	3
1700	2666	4600	6960	5100	113
1800	2816	4700	7127	5200	751
1900	2969	4800	7299	5300	1236
2000	3105	4900	7507	5400	2487
2100	3240	5000	7727	5500	2943
2200	3376	5057	7832	5600	4031
2300	3519	5058	119	5700	4893
2400	3658	5059	313	5800	6041
2500	3812	5060	1251	5900	6579
2600	3941	5061	1312	6000	7085
2700	4077	5062	1767	6100	7420
2800	4209	5063	1922	6200	7670
2900	4334	5064	2189		
3000	4444	5065	2198		

In looking up the earlier observations of nebulae and clusters it is frequently very exasperating and time-consuming to be obliged to identify objects given in the older nomenclatures of Messier, Herschel, and the General Catalog. For my own convenience in this respect I prepared last year a finding list of the Messier numbers, similar to that published by Dr. Shapley, but omitting the descriptions, and one for the General Catalog in terms of the N. G. C. numbers. The latter is published above in the belief that it may be a convenience to others.

It is my belief that these older nomenclatures should be discarded entirely, and that reference to nebulae and clusters should be made solely by the N. G. C. number. H. D. CURTIS.

NEW STARS IN SPIRAL NEBULAE.

A telegram has just been received announcing the discovery by Professor Ritchey, at Mt. Wilson, of a nova in the spiral nebula N. G. C. 6946. The new star is of about the fourteenth magnitude, and is located 105" south and 37" west of the nucleus of the spiral.

A reproduction of this spiral may be seen in Plate 62 of Vol. VIII, *Publications of the Lick Observatory*; its position for 1900 is $\alpha = 20^{\text{h}} 32^{\text{m}}.8$; $\delta = +59^{\circ} 48'$.

In August, 1885, a new star suddenly flashed out in the Great Nebula of *Andromeda*, only a few seconds of arc from the nucleus; it rose to the seventh magnitude, rapidly diminished in brightness, and is now invisible.

Likewise the nova *Z Centauri* appeared at a distance of only $28''$ from the nucleus of the spiral nebula N. G. C. 5253.

Three cases may be added to those just given. The spiral nebula N. G. C. 4527 ($\alpha = 12^{\text{h}} 29^{\text{m}}.0$, $\delta = +3^{\circ} 12'$) is a somewhat elongated spiral about five minutes of arc in total length. At some time between January 13 and March 20, 1915, a nova appeared at the edge of the inner, brighter portion of this nebula, $44''$ east and $8''$ north of the nucleus. It occurs on two Crossley plates of dates March 20 and April 16, and was about magnitude 14 on the earlier date. Director Pickering has kindly had a search made on the Harvard plates of this region, and Professor Barnard has placed at my disposal enlarged positives of two plates taken at Yerkes Observatory, affording, in combination with the Crossley negatives, a total of eleven plates covering the history of the object from February, 1900, to April, 1917, and serving to confirm its character as a nova. It is entirely invisible at present.

Two additional novae have been found in the spiral nebula N. G. C. 4321 (M. 100; $\alpha = 12^{\text{h}} 17^{\text{m}}.9$; $\delta = +16^{\circ} 23'$). This is a fine, approximately round, rather open spiral about five minutes of arc in diameter. At some time prior to March 17, 1901, a new star appeared in this spiral, located $110''$ west and $4''$ north of the nucleus; it was approximately magnitude 13.5 on March 17, 1901, and about a magnitude fainter in several images recorded on Crossley Reflector plates one month later. A second nova appeared in the same spiral at some time prior to March 2, 1914; it was about the fourteenth magnitude, and was located $24''$ east and $111''$ south of the nucleus. Both objects have disappeared completely. I hope later to collate photographs of this region taken at other observatories in order to give a more complete history of the objects.

It is possible that a single nova might appear, so placed in the sky as to be directly in line with a spiral nebula, tho the chances for such an occurrence would be very small. But that six new

stars should happen to be thus situated in line with a nebula is manifestly beyond the bounds of probability; there can be no doubt that these novae were actually in the spiral nebulae. The occurrence of these new stars in spirals must be regarded as having a very definite bearing on the "island universe" theory of the constitution of the spiral nebulae.

H. D. CURTIS.

July 28, 1917.

THE SPECTRA OF SOME DOUBLE STARS.

The spectra of the components of the following double stars have been observed at Mount Wilson recently with the Cassegrain spectrograph. The magnitudes and the separations for most of these stars are from a list due to Professor Aitken.

	R. A. 1900	Dec.	Mag.	Dis.	Spectrum
Σ 3062	0 ^h 1 ^m .0	+57° 53'	6.5 - 7.5	1".6	G ₁ - G ₂
η <i>Cassiope</i> .	0 43 .0	+57° 17'	3.6 - 7.9	6".5	G ₁ - K ₂
ζ <i>Cancer</i>	8 6 .5	+17° 57'	5.6, 6.3 - 6.0	6"	F ₁ - G ₁
ϵ <i>Hydrae</i>	8 41 .5	+ 6° 47'	3.5 - 7.5	3".2	G ₁ - F ₂
ξ <i>Urs. Maj.</i>	11 12 .9	+32° 6'	4.4 - 4.9	3".0	F ₁ - G ₂
ϵ <i>Boötis</i>	14 40 .6	+27° 30'	2.7 - 5.1	2".8	G ₁ - A ₁
ξ <i>Boötis</i>	14 46 .8	+19° 31'	4.7 - 6.6	2".0	G ₁ - K ₂
μ <i>Herculis</i>	17 42 .5	+27° 47'	3.5 - 10.0, 10.1	32"	G ₁ - M _b
70 <i>Ophiuchi</i>	18 0 .4	+ 2° 31'	4.1 - 6.1	4".5	K ₁ - K ₂

In all cases except those of ϵ *Hydrae* and ϵ *Boötis* the fainter component is of the more advanced type. Perhaps the most interesting star in the list is the faint companion, itself a very close double, of μ *Herculis*. This has the well marked characteristics of the "dwarf" type of M stars.

Under good conditions of definition there seems to be no difficulty in securing the separate spectra of stars of 2" distance even when the difference in magnitude is considerable.

W. S. ADAMS,

A. H. JOY.

PRELIMINARY PARALLAX OF MESSIER 51 (N. G. C. 5194).

Thirty-minute exposures taken at the equivalent 80-foot focus of the 60-inch reflector show the central part of the spiral nebula Messier 51 as a round star-like image, well suited to accurate measurement. Ten plates of good quality, taken in 1916 and 1917, were measured to see whether any sensible parallax could